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UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

Distr.
RESTRICTED
UNIDO/IOD.86
19 May 1977
Original: ENGLISH

REPORT OF THE
INDIAN EXPERTS' MISSION TO THE
ANDEAN GROUP COUNTRIES 1/
6 APRIL 1977 TO 16 MAY 1977

PROJECT VC/RLA/77/041

TECHNICAL COOPERATION AMONG DEVELOPING COUNTRIES
PREPARATION OF SPECIFIC CO-OPERATIVE ENGINEERING AND
INDUSTRIAL PROJECT PROFILES

Organised by the UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION (UNIDO)
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Corporation (CAF)

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id.77-3593

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Indian abbreviations used

UNITED NATIONS  NATIONS UNIES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

LERCHENFELDER STRASSE 1, A-1070 VIENNA, AUSTRIA

P.O. BOX 707, A-1011

TELEPHONE: 46 800 TELEGRAPHIC ADDRESS: UNIDO TELEX: 78048

REFERENCE:

Dr. A. Khan
Executive Director
UNIDO,
Vienna

Sr. Julio Sanjines
President
Corporacion Andina de Fomento,
Caracas

Dr. Y. Nayudamma
Director-General
Council of Scientific and Industrial Research,
New Delhi

Dear Sirs,

We the members of the Indian Experts' Mission to the Andean Group Countries for Identification of Specific Cooperative Engineering and Industrial Project Profiles, are pleased to append the Report on our mission.

The Report was compiled at the conclusion of our visit in Vienna itself. In the preparation of the Report, Econ. Jose Ascanio of CAF, who had been specially deputed to Vienna by the President of CAF for the purpose, was also associated.

Recognising the sentiments expressed by CAF/Andean Countries during our visit, we wish to draw your kind attention to our specific recommendation in regard to immediate follow-up of the Mission Report by

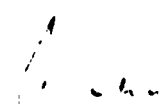
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arranging a meeting, preferably at Caracas, in which (INDO/CAP/
Andean Countries/Govt. of India participate at the highest levels
in order to formulate agreements on implementation.

Thanking you, we remain

Vienna,
16 May 1977

Yours faithfully,


Chandra Mohan (Leader)


M.K. Gumbhar


Rajendra Kumar

16.5.77.


R.K. Shenoy


R.V. Gopalakrishnaiah

PREFACE

1. PREAMBLE:

1.1. Co-operation between developing nations is an acknowledged necessity and is increasingly receiving attention of the nations aspiring for self-reliance, industrialization and higher overall living standards. United Nations General Assembly in their resolution 3177 (XXVIII), adopted in their 28th session in February 1974, emphasized effective co-operation between developing countries in the field of trade, transport, industry, technological know-how, technical assistance, financial and monetary matters. The concept is supported in more specific terms by UNIDO Industrial Board resolution 36 (VII) and by international seminars like that on transfer of technology held in India in December 1972. "The Lima Declaration and Plan of Action on Industrial Development and Co-operation" adopted at the Second General Conference of UNIDO (Lima, Peru, 12-26 March 1975) emphasizes such co-operation among the developing countries. The Round Table Ministerial Meeting on Technological and Industrial Cooperation among Developing Countries (New Delhi 4 - 8 January 1974) strongly recommended to UNIDO for initiation of effective co-operation programmes.

1.2. The UNIDO/INDIA Agreement on International Technology Transfer (1972) provides an avenue for translating the above concepts into working propositions.

2. CAF-UNIDO-Govt. of India Cooperative Programme

2.1. During June-July 1974 as a first step towards formulating a cooperative programme between the Andean Countries and India, a Government of India Expert visited Corporacion Andina de Fomento (CAF) Headquarters and elaborated an action plan, including the terms of reference for a CAF Mission to India.

2.2. Selected policy-making senior officials of CAF together with senior officials of member countries of the Andean countries visited India in October-November 1975 for exchange of information, sharing of experience and formulation of specific proposals for cooperative activities in industrial development, in selected areas of engineering industries and allied development institutions.

The team consisted of two groups - viz. i) Policy Group (3 members) visiting India for 2 weeks and ii) Technical Group (5 members) for 4 weeks.

2.3. Based on the discussions and visits, the CAF Mission identified the following areas where India's experience, know-how and technology might be suitable for sharing experience:

1. Machine-tools
2. Foundry and forge
3. Metal-working machinery and engineering centres for assisting industries
4. Manufacture of industrial engines, pumps, tractors, auto-components, sewing machines etc.
5. Railway rolling stock and railway systems.

2.4. This visit of a team of Indian Experts to the Andean countries to identify specific projects/areas of cooperation was a sequel to the recommendations of the CAF Mission.

Chapter 1

1. Introduction:

1.1. Within the framework of the "UNIDO/Government of India Agreement on International Technology Transfer" (1972) and the "Memorandum of Understanding" among the Andean Development Corporation (CAF), Government of India and UNIDO (October 1975), an expert team of 5 members from India visited the Andean countries in April/May 1977 (13/4/77 to 11/5/77) for identification of specific projects for technical co-operation between the Andean Countries and India.

The team comprised of:

1. Chandra Mohan - Leader
2. M.K. Gankhar
3. Dr. Rajendra Kumar
4. R. K. Shenoy
5. B.V. Gopalakrishnaiah

Prior to the visit to Andean countries the team had briefing sessions at CSIR, New Delhi and UNIDO, Vienna.

1.2 The team visited Venezuela (Caracas), Peru (Lima), Bolivia (Santa Cruz, Cochabamba and La Paz), Chile (Santiago) and Ecuador (Quito) for identification of projects/programmes of technical co-operation. Detailed discussions were held by the team with the respective Ministries of the Government, Financial and Development Institutions, Railway and Steel Authorities, Research and Educational Organisations, Chambers of Commerce and Industry etc. Visits were also paid to some of the industries in the metal-mechanic sector in a few countries.

The Discussions/visits (Details at Annex I) were arranged by CAF and Econ. Jose L. Ascanio/Ing. Francisco Lira from CAF accompanied the team during all the discussions/visits.

1.3 Specific projects were identified during the discussions/visits by an analysis of the needs of the various institutions of the countries, keeping in view at the same time, India's own experience and capabilities. The team's approach has been to place the experience gained by India in absorption/adaptation of technology during the last 30 years of its industrial development at the disposal of the Andean countries so that their efforts at industrialisation could be supplemented.

Notable aspect which stood out most prominently in all the discussions was the keen desire of the Andean countries for rapid industrialization and their appreciation of the benefit which India's experience in this direction would provide.

2. Specific Projects Identified by the Team

2.1 Based on the above approach, specific projects for cooperation identified by the team are detailed in Chapter 2. Each project is covered for its present status, the scope of cooperation required, physical inputs, the priority accorded by the respective countries and, approximate cost involvements. Where necessary, scope of cooperation is phased and costs for each phase indicated separately. As would be seen costs do not cover Setting up/Expansion of institutions and/or equipment costs. Costs shown are only towards Experts/Expertise/Feasibility and Project Report Preparation (Note: preliminary cost estimates, as a guideline only).

2.2 Specific projects, their priority and cost involvements are:

1. <u>VENEZUELA</u>	Costs US \$	Priority
1.1. Building up of rail transport to sustain increased industrial activity, particularly steel making		
	Phase I 325,000	Immediate
	Phase II later	
2. <u>PERU</u>		
2.1. Establishment of 2000t foundry	10,000	Immediate
2.2. Technical cooperation in the field of mineral beneficiation	35,000	Immediate
2.3. Establishment of a Heavy Electro-mechanical Plant for manufacture of motors and alternators (200-10,000 HP)	Inf. Exchange first	High

<u>PERU (cont'd)</u>		Costs US \$	Priority
2.4.	Establishment of a Research Institute in Foundry and Forge Technology		
	Phase I	10,000	High
	Phases II and III	To follow	
2.5.	Evaluation of the Peruvian Coal to assess blending characteristics for production of metallurgical coke		
	Phase I	50,000	High
	Phase II	To follow	
3.	<u>BOLIVIA</u>		
3.1.	Development of standardised designs/fabrication codes for light industrial steel structures and for metal carpentry items	180,000	Immediate
3.2.	Setting up of an Institution for training technical instructors		
	Phase I	50,000	Immediate
	Phase II	Later	
3.3.	Rehabilitation of Railway system	1,000,000	Immediate
3.4.	Planning for new steel plant complex (Changolla iron ore in Cochabamba)		
	Phase I	60,000	Immediate
	Phases II and III	Later	
3.5.	Detailed geological prospecting of rock phosphate deposits in Santa Cruz Deptt.	120,000	High
3.6.	Planning, organisation and administration of Industrial Parks (Industrial Estates)	150,000	Immediate

<u>BOLIVIA (cont'd)</u>	Costs US \$	Priority
3.7. Setting up of a large fertiliser complex	200,000	1978
3.8. Rural Electrification Programmes	Inf. Exchange first	Immediate
3.9. Exploitation of iron ore deposits on Eastern (Brazilian) Border	Inf. Exchange first	Immediate
3.10. Construction of link railway between Western and Eastern railway systems	Later	High
4. CHILE		
4.1. Technical cooperation with SOCOMENTAL for software for optimised/economic designs of		
1. Telecom/Power Transmission Line Towers	120,000	Immediate
2. Heat Exchangers		
5. ECUADOR		
5.1. Strengthening technical capabilities of CENDES for accelerated promotion of industry and technology	410,000	Immediate
5.2. Establishment of a light forge shop for manufacture of hand-tools		
Phase I	30,000	Immediate
Phase II	100,000	Later
5.3. Strengthening of industrial design and higher technical capabilities in Metal Mechanic sector	400,000	High
5.4. Setting up of a grey iron foundry with a capacity of 5-6000 t/year	150,000	Immediate
5.5. Establishment of a 400,000 t/year integrated steel plant based on direct reduction		
Phase I	200,000	Immediate
Phases II and III		To follow

3. Exchange of Information

3.1. In addition to the specific projects, a large interest was also shown by both the sides in exchange of information on various aspects relating to industrial development and infrastructure, social services etc. Specific areas of interest for information exchange are detailed in Chapter 3, which also indicates the Institutions on both the sides which can supply/need the information.

3.2. The team strongly feels that speedy and regular flow of information between the Andean Countries and India and, vice versa, will be a major step towards bridging the distance gap between the two and create a climate for closer co-operation.

4. Recommendations

4.1. During the visit, the Committee noted a certain measure of disappointment in CAF and the Andean Countries at the delay which had taken place in the visit of the Indian team due to various reasons.

In this background it is imperative that decisions on the specific projects identified by the Mission are taken at the earliest so that they get off the ground without delay.

4.2. Towards speedy decision-making on the projects identified, it is recommended that a meeting, at which UNIDO/CAF/Countries of the Andean Group/India are represented at the highest levels, should be convened at the earliest in Caracas. (Within the next 2 months). Caracas is suggested as the venue as it would be more convenient for member countries of the Andean Group to attend.

Firm decisions should be taken at this meeting on:

1. Projects finally approved
2. Financing of the projects and sharing of costs between UNIDO/CAF/INDIA/MEMBER COUNTRIES on each specific project.

4.3. A Coordination-cum-Information Exchange Cell should be set up in India urgently for technical cooperation with the Andean countries. Responsibilities of this cell should cover:

1. Location and bringing the Indian Institution finally identified as the executing agency for a specific project in touch with the corresponding institution in the Andean Country concerned.
2. Monitoring of projects and any specific follow-up which may be required by the two sides.
3. Collection and dissemination of the information required for exchange by the two sides from/to respective institutions.

5. Acknowledgements:

The team wishes to record its deepest appreciation and thanks to CAF and the respective representatives of Andean Countries whose spontaneous cooperation and assistance made it possible for the action programme of the team to be concluded successfully and to schedule. Much of the credit for the success of the Mission also goes to Econ. Jose Ascanio and Ing. Francisco Lira from CAF, one of whom was always with the team throughout the trip. But for their wide knowledge of the Andean Countries and their aspirations, and of English, the task of the team would have been indeed most difficult.

The team, in particular, expresses its deep gratitude to Sr. Julio Sanjines, President of CAF, and Messrs. G.S. Gouri and Swamy Rao of UNIDO, for the excellent arrangements for the team to conduct its deliberations and conferences.

The team is also grateful for the support, guidance and hospitality warmly extended by Their Excellencies, the Indian Ambassadors in Venezuela, Peru, Chile and Vienna.

CHAPTER 2

PROJECT: 1.1

1. Country: VENEZUELA
2. Nature of Project: National rail transport industry
3. Title: Building up of rail-transport for country to sustain increased industrial activity, particularly steel making.

4. Introduction:

4.1 A 5 million ton integrated steel plant and other heavy industries are under construction in the Guayana Region (South-East Venezuela), while the main consumption centres are in North/Central Venezuela. Construction of a 700 km railway line connecting Ciudad Guayana to San Juan de los Morros to serve the transport needs is, consequently, a very high national priority.

A project study was completed in 1974 followed by global bids. The Bids (ranging between 1.0 - 2.5 billion US\$) are considered unsuitable. The National Planning Body (CORDIPLAN) have reiterated the highest priority for implementation and feel that the project is already delayed.

4.2 Overall project envisages:

1. Techno-economic reappraisal of the previous study made in 1974;
2. Detailed survey and permanent way construction, including bridges, particularly over the Orinoco River;
3. Rolling stock designs and procurement;
4. Maintenance facilities for Locomotives, rolling stock and other assets;
5. Operating systems, signalling, running safety etc.

CHAPTER 2

cont'd PROJECT: 1.1.

6. Management and operation of railway system for 3 years in conjunction with Venezuelan Administration and their training for independent operation.

5. Scope of Cooperation:

5.1. Phase I

A team of Indian experts to undertake re-evaluation and updating of the 1974 Project Report.

5.2 Phase II

To be decided after Phase I.

6. Physical Inputs:

6.1 Phase I

A team of 9 Experts from Indian Rlys to visit Venezuela for 4 months for site inspection, detailed discussions in CORDIPLAN, Instituto Autonomo Administracion Ferrocarriles del Estado and, Financial Institutions. For updating of 1974 Report, the Indian team will work jointly with the counterpart National team from Venezuela. All local support will be provided by Venezuela.

7. Priority:

Immediate

8. Costs:

Phase I: US\$ 325,000

9. Co-ordinators:

Venezuela: Ferrocarriles de Venezuela
: CORDIPLAN
India: RITES, New Delhi

CHAPTER 2

PROJECT: 2.1

1. Country: PERU
2. Nature of Project: Industrial level
3. Title: Establishment of a 2 000 t/year foundry
4. Introduction:

COFIDE have accorded a very high priority to the setting up of a modern foundry (primary emphasis on casting needs of the mining sector, though castings for automotives, machine tools also planned) with a capacity of 2,000 t/year and the following product mix:

Classification by Type

Mn. Steel:	70%
Nodular:	20%
Grey iron:	5%
Others:	5%

Classification by Unit Weight

Less than 100 kg:	5%
Between 100 - 500 kg:	60%
500 - 1000 kg:	4%
1000 - 2000 kg:	5%
2000 - 4000 kg:	18%
4000 - 6000 kg:	1%
6000 - 10000 kg:	7%

CHAPTER 2

cont'd PROJECT: 2.1

Total investment envisaged is US\$ 3 million. Detailed planning is being done by CMMS (a wing of COFIDE). Project report for Planta de Fundicion Liviana (the proposed foundry) has already been made. During discussions it was felt that the economics of a foundry with such a diverse type/weight mix of castings needed re-examination.

5. Scope of Cooperation:

1. Immediate reappraisal of the project for better production economics. Project Report was handed over to the mission and re-appraisal was promised within 60 days of return of the Indian Mission.

6. Priority: Immediate
7. Costs: US\$ 10,000 (will be done free of charge by Punjab Tractors Ltd.)
8. Co-ordinators:
Peru: Corporacion Financiera de Desarrollo (COFIDE)

India: Punjab Tractors Ltd., Chandigarh

CHAPTER 2

PROJECT: 2.2

1. Country: Peru
2. Nature of Project: Institutional
3. Title: Technical cooperation in the field of mineral beneficiation

4. Introduction:

On account of the paucity of trained mineral and metallurgical engineers in Peru, INCITEMI desires:

1. Visit of an Indian professor for lectures and to assess current mineral beneficiation practices in Peru for 3 months.
2. National Metallurgical Laboratory, Jamshedpur to study possibilities of producing manganese or manganese dioxide from the leach liquor obtained from complex lead-silver ores during the process of leaching of silver bearing concentrates.
INCITEMI will despatch necessary samples of leach liquor to India (containing 100 kg of Manganese).

5. Priority: Immediate
6. Time Schedule: 6 months
7. Costs: US \$ 35,000
8. Co-ordinators:
Peru: Instituto Cientifico Tecnológico y Minero (INCITEMI)
India: NML, Jamshedpur

CHAPTER 2

PROJECT: 2.3

1. Country: PERU
2. Nature of Project: Core Industry
3. Title: Establishment of a Heavy Electromechanical Plant for manufacture of motors and alternators (200 Hp to 10,000 Hp)

4. Introduction:

Under Decision 57 of the Junta, Peru has been assigned the responsibility of setting up the Heavy Electromechanical Plant for Andean Countries. Feasibility study has already been made by CMMS and know-how proposals are currently being obtained.

5. Scope of Cooperation:

Information from India, in respect of:

1. Existing factories in India; product range; market share; general information on factories.
2. Relevant experience with foreign collaboration; guidance on selection of best technology; likely mistakes that are to be avoided.

6. Priority: High

7. Costs: (Exchange of information only)

8. Co-ordinators:
- Peru: Corporacion Financiera de Desarrollo (COFIDE)
- India: Bharat Heavy Electricals
: Directorate General of Technical Development

CHAPTER 2

PROJECT: 2.4

1. Country: PERU
2. Nature of Project: Institutional level
3. Title: Establishment of a Research Institute in Foundry and Forge Technology.
4. Introduction:

Peru desired the establishment of a Research Institute for Foundry and Forge Technology with the objective of research, applied technology, training etc. During discussions it emerged that a Research Institute with such diverse objectives and fields would necessarily have to be large and consequently entail large investments to be effective. It was therefore felt that before establishing the Institute, the objectives should be clearly defined.
5. Scope of Cooperation
 1. Phase I: 1 Expert for 1 month to define the objectives of the Research Institute, keeping in view the present status and the future needs of the foundry and forge industry in Peru
 2. Phase II: After the objectives have been defined, preparation of detailed project report for the Research Institute
 3. Phase III: Implementation of the project
6. Priority: High
7. Costs: Phase I: US\$ 10,000
Phases II and III: After decisions on Phase I
8. Co-ordinators: Peru: Corporacion Financiera de Desarrollo (COFIDE)
India: National Metallurgical Laboratory, Jamshedpur
: National Institute for Foundry and Forge Technology, Ranchi

CHAPTER 2

PROJECT: 2.5

1. Country: PERU
2. Nature of Project: Institutional
3. Title: Evaluation of the Peruvian coal to assess blending characteristics for production of metallurgical coke

4. Introduction:

Considerable coal deposits have recently been discovered in the Andean region of Peru. It is desired to study their characteristics and properties to ensure optimum utilization and to ascertain their suitability for production of metallurgical coke.

5. Scope of Cooperation:

It is recommended that the project be handled in two phases:

Phase I: Visit of an Indian Expert for 3 months to develop/advise on methodology of collection of coal samples, actual collection of samples, preparation of outline for a Coal Survey Station in Peru and actual pilot plant studies on coal samples for blending characteristics in India.

Phase II: Preparation of a Project Report and establishment of Coal Survey Station in Peru.

6. Priority: High
7. Costs: Phase I: \$ 50,000
Phase II: To be worked out later
8. Co-ordinators: Peru: Instituto Cientifico Tecnologico y Minero (INCITEMI)
India: CFRI, Jaisalmer/CSIR

CHAPTER 2

PROJECT: 3.1

1. Country: BOLIVIA
2. Nature of Project: Institutional
3. Title: Development of standardized designs/fabrication codes for light industrial steel-structures and for metal carpentry items (doors, windows etc.)
4. Introduction:

With increasing industrial development, ready availability of optimized/economic designs of light industrial structures is considered essential, both from speedy implementation and safety angles. A design imported from Chile and used extensively now is considered inadequate and needs refinement.

Another aspect of increased construction activity (both industrial and housing) is the necessity of changeover to metal from wood used conventionally for items like doors, windows etc. Here again standard designs, jointings, fabrication techniques are required to be urgently evolved.
5. Scope of Co-operation:
 1. 1 Expert in design/manufacturing methods of industrial structures to evolve standard designs/fabrication codes, keeping in view local limitations of manufacturing facilities/technical skills, for a duration of 6 months.
 2. 1 Expert for developing standardised designs/fabrication codes for metal substitutes for hitherto used wood items such as doors, windows etc. for a duration of 1 year.
6. Priority: Immediate
7. Cost: US \$ 180,000
8. Co-ordinators:

Bolivia: Ministerio de Industria Y Comercio

India: SERC. Roorkee

CHAPTER 2

PROJECT: 3,2

1. Country: BOLIVIA
2. Nature of Project: Institutional level
3. Title: Setting up of an institution for training Technical Instructors

4. Introduction:

Bolivia plans to train 15,000 artisans in the automotive and allied industries during the next ten years to provide skilled workers for the automotive and allied metal-mechanic industries. (Assignment under Cartagena Agreement) For this large technical training programme they require to build up an institute for training the instructors, with particular reference to the following trades:

1. Foundry
2. Forge
3. Heat treatment
4. Welding - particularly metal structures
5. Machining processes
6. Quality control
7. Maintenance of machine tools and plant.

5. Scope of Co-operation:

Phase I

1. Preparation of Detailed Project Report for the institute covering training needs, training systems and courses, equipment and facilities;

Phase II

2. Deputation of Indian experts during the initial phase for starting the institute and training of local faculty.

6. Priority: Immediate
7. Costs: Phase I: US \$ 50,000
8. Co-ordinators: Bolivia: Corporacion Financiera del Ejercito Nacional (COPAFENNA)
India: CSIR

CHAPTER 2

PROJECT: 3.3

1. Country: BOLIVIA
2. Nature of Project: National rail transport industry
3. Title: Rehabilitation of railway system
4. Introduction:

The Bolivian National Railways (ENFE) have already completed Phases 1 and 2 of their Rehabilitation Programme with World Bank credit and foreign consultants. Certain rehabilitation programmes, including procurement of locomotives, freight cars and a part requirement of passenger coaches (except 60 coaches) have been completed in these two phases. For Phase 3 (Final Phase), a World Bank credit of US \$ 35 million has already been negotiated.

ENFE desire a reorganisation of their present consultancy arrangements and seek Indian co-operation for implementing Phase 3.

5. Scope of Co-operation:
 - 5.1 Services of Indian Experts for guidance on the following aspects:
 1. Critical study and revamping of all aspects of railway management for maximum efficiency.
 2. Reorganisation of Workshops/Depots for maintenance of diesel locomotives/rolling stock for reliable and economic functioning.
 3. Drawing up of track renewal programmes and their speedy and economic implementation.
 4. Spare part scheduling and procurement, stores management and inventory control.
 - 5.2 ENFE are also keen that the 60 remaining passenger coaches are offered by the Integral Coach Factory, India (ICF), preferably with long term credit. India should also consider the possibility of setting up a facility for erection/furnishing of these coaches in Bolivia, a facility which could subsequently be used as a rolling stock repair workshop.

CHAPTER 2

cont'd PROJECT: 3.3

6. Priority:

Immediate

7. Costs:

1. Expertise/experts: US \$ 1,000,000
2. Supply of coaches - to be negotiated

8. Co-ordinators:

Bolivia: Empresa Nacional de Ferrocarriles
(ENFE)

India: Rail-India Technical and Economic
Services (RITES), New Delhi

CHAPTER 2

PROJECT: 3.4

1. Country: BOLIVIA
2. Nature of Project: New Core Industry
3. Title: Planning for new steel plant complex based on Changolla iron ore in Cochabamba Department

4. Introduction:

4.1 Preliminary geological studies have indicated an iron-ore deposit (Estimated at 2 - 20 million tons) at Changolla in addition to the large deposit of 2,000 - 3,000 million tons in the vicinity of the Brazilian Border. While exploitation of the large deposit is being planned in co-operation with Brasil, immediate exploitation of the smaller deposit is desired.

Kaisers-Germany, have been awarded a contract for detailed geological prospecting and their site work is scheduled to commence in 40 days.

5. Scope of Co-operation:

Phase 1: 1 Geological Expert for 6 months to be seconded immediately to oversee the work being done by Kaisers and advise Bolivian Government.

Phase 2: After conclusion/decisions on Phase 1, 1 Expert in ore beneficiation/pelletisation.

Phase 3: After Phase 2, 1 Expert in direct reduction of iron-ore.

6. Priority: Phase 1: Immediate
Phases 2 and 3: To follow sequentially.

7. Costs: Phase 1: US \$ 60,000
Phases 2 and 3: to be estimated later

8. Co-ordinators:
Bolivia: Corporacion de Desarrollo de Cochabamba (CORDECO)
India: Geological Survey of India/Mineral Exploration Corporation

CHAPTER 2

PROJECT: 3.5

1. Country: BOLIVIA
2. Nature of Project: Basic Industry
3. Title: Detailed Geological prospecting of rock phosphate deposits in Santa Crus Deptt.
4. Introduction:

A rock phosphate deposit has been recently located in Santa Crus Deptt. Detailed geological prospecting has, however, yet to be done. In view of its economic importance this is imperative.
5. Scope of Co-operation:

1 Expert in geology to guide and take full charge and responsibility for detailed prospecting, for a duration of 1 year. Support organisation/ facilities for prospecting will be provided by Bolivia, though specialised instruments, if required, may have to be brought from India.

This project could overlap Project 3.4 (Phase 1), when same expert could handle the two assignments simultaneously
6. Priority: High
7. Costs:

If overlapped with Project 3.4: US \$ 60,000
If undertaken separately : US \$ 120,000
8. Co-ordinators:

Bolivia: Comite de Obras de Publicas,
Santacruz

India: Geological Survey of India
Mineral Exploration Corporation

CHAPTER 2

PROJECT: 3,6

1. Country: BOLIVIA
2. Nature of Project: Industrial infrastructure
3. Title: Planning, organization and administration of Industrial Parques (Industrial Estates)

4. Introduction:

Bolivia is planning to set up, as part of their industrialisation programme, industrial estates at selected centres. The estate at Santa Cruz has started/functioning and estates for Cochabamba and Oruro are in advanced stages of planning/execution. These estates have been accorded a high priority by the Government. To develop this programme and make it fully successful they desire to utilise India's large experience in the setting up such estates with special emphasis on:

1. Layout of estates
2. Regulations and Bye-laws
3. Incentives for attracting industriss
4. Planning of services
5. Pollution control and industrial safety
6. Organisation and administration for running estates
7. Common facilities for assisting industries

5. Scope of Co-operation:

1 Expert for a period of 12 months to advise them on above areas.

6. Priority: Immediate

7. Costs: US \$ 150,000

8. Co-ordinators:

Bolivia: (1) CORPORACION DE DESARROLLO DE COCHABAMBA (CORDECO)
(2) COMITE DE OBRAS PUBLICAS DE SANTA CRUZ

India: Development Commissioner, Small-Scale Industries (Government of India)

CHAPTER 2

PROJECT: 3.7

1. Country: BOLIVIA
2. Nature of Project: Core Industry
3. Title: Setting up of a large fertilieer complex
4. Introduction:

A small fertilieer plant (Urea 70,000 t and ammonia 56,000 t) is already in the procees of establishment and global tenders have been floated. By 1982 it is proposed to set up another larger fertilizer plant (Urea 1000 t/day and ammonia 600 t/day). Feasibility studies for this plant have just been completed by Japan Consulting Institute. The plant will be located on the Brazilian Border and will be largely meant for export to Braeil. Braeil will also particoipate financially in its construction.
5. Scope of Co-operation:

Indian expertise after 1 year for:

 1. Technical negotiations with equipment suppliers, contractors etc.
 2. Establishing distribution and marketing organisation/systems, including exports.
6. Priority: During 1978
7. Costs: \$ 200,000
8. Co-ordinators:

Bolivia: Yacimientos Petroliferos Bolivianos (YPFB)
India: Engineers India Ltd.
Fertiliser Corporation of India etc.

CHAPTER 2

PROJECT: 3.8

1. Country: BOLIVIA
2. Nature of Project: National Planning and Infrastructure
3. Title: Rural Electrification Programme

4. Introduction:

A large-scale programme is under way in Bolivia for rural electrification. Current programmes are largely based on small diesel generating sets. The areas to be taken up first are Yungas, Alto-Beni, Beni and Bando. Bolivia is aware of similar programmes of mass rural electrification completed by India. They will like India to furnish them the detailed information on planning and strategy for schemes, bye-laws, tariffs etc. Bilateral arrangements will be subsequently worked out for planning economic systems, based on small hydroelectric stations linked to a grid.

5. Scope of Co-operation:

Planning economic generation/distribution systems for rural electrification. Exact scope will be defined after exchange of information on experience.

6. Priority: Immediate

7. Costs: To be worked out later after clear definition of scope

8. Co-ordinators:

Bolivia:	Instituto Nacional de Electrificación Rural (INER); Ministerio de Energía e Hidrocarburos
India:	Rural Electrification Corporation

CHAPTER 2

PROJECT 3.9

1. Country: BOLIVIA
2. Nature of Project: Establishment of Core Industry
3. Title: Exploitation of iron ore deposits on Eastern/Brazilian Border

4. Introduction:

A 2/3000 million tonne iron ore deposit has been located in the proximity of the Brazilian border. Detailed feasibility study for its exploitation is currently in hand by Arthur G. McKay (USA). Atkine Planning (UK) are acting as advisers to the Bolivian Government and providing supervisory services.

5. Scope of Co-operation:

For the steel plant which may be eventually established, Indian assistance is sought towards:

1. Selection of appropriate technology
2. Urban planning and planning for human resources for steel complex
3. Training of personnel in
 - Geology
 - Beneficiation
 - Plant management during construction and operation

They desire Indian consulting firms to get in touch with them.

6. Co-ordinators:
 - Bolivia: SIDERURGIA - SA SIDERSA (SIDERSA)
 - India: SAIL-INDIA

CHAPTER 2

PROJECT: 3.10

1. Country: BOLIVIA
2. Nature of Project: National Rail Transport Industry
3. Title: Construction of link railway between Western and Eastern railway systems
4. Introduction:

The ENFA has two unlinked railway systems in the Western and the Eastern zones. Construction of a 300 km (MG) line between Santa Cruz and Aquile which will link the two systems is a high priority national project. This link line will also provide a through MG rail communication between the Pacific and Atlantic Ocean ports. Techno-economic studies and surveys etc. are now in progress and the construction is likely to be undertaken in 1979.
5. Scope of Co-operation:

Bolivia will welcome Indian Railways participation in construction of this line. Indian Railways may also bid for this work in 1979 when contracts will be finalised.
6. Priority: High
7. Costs: Later
8. Co-ordinators:

Bolivia: Ministerio de Transportes, Comunicaciones
Y Aeronautica Civil

India: RITES

CHAPTER 2

PROJECT: 4.1

1. Country: CHILE
2. Nature of Project: Specific Industry
3. Title: Technical co-operation with SOCOMETAL for development of software for optimized/economic designs of:
 1. Telecom/Power transmission line towers.
 2. Heat exchangers.

4. Introduction:

SOCOMETAL is one of Chile's oldest and largest industries in the metal mechanic field with a diverse product range. It is primarily a heavy fabrication unit with a machine shop and its present product lines include:

1. Railway rolling stock: passenger coaches and wagons
2. Transmission towers/structures
3. Boilers and pressure vessels
4. Heavy fabricated items for petro-chemical industry
5. Mining equipment, Granby Cars etc.

5. Scope of Cooperation:

Development of software for optimized/economic designs of:

1. Telecom/Power transmission line towers
2. Heat exchangers

6. Physical Inputs: Experts: 2
Duration: 6 months

7. Priority: Immediate

8. Costs: US\$ 120,000

9. Co-ordinators: Chile: Soc. de Construcciones Metalicas S.A.,
Santiago (SOCOMETAL)
India: SERC, Roorkee
CMERI, Durgapur

1. Country: ECUADOR
2. Nature of Project: National Policy and Planning
3. Title: Strengthening technical capabilities of CENDES (national industrial development organization) for accelerated promotion of industry and technology transfer.
4. Introduction:

CENDES has the responsibility for promotion of industry in Ecuador: project identification and techno-economic studies, development of local entrepreneurship, foreign collaborations, technical experts etc. They work in close co-operation with National Financial Institutions like CV - CFI and International Institutions such as IBERD, BID, CAF etc. They also provide technical/financial guidance to existing industry in private/governmental sectors for growth/modernization/viability of operations.
5. Scope of Cooperation:

To strengthen capabilities of CENDES, they require

 - 5.1 1 Expert in the metal-mechanic field for 1 year to identify new projects, their techno-economic evaluation and development and, scope of technology transfer programmes for ensuring absorption.
 - 5.2 5 Short-term Experts for 1 month each to identify future projects and technologies for future industrial programme of CENDES in the field of:
 1. Metal mechanics
 2. Automotive industries
 3. Pulp and paper
 4. Petrochemicals
 5. Electronics/electrical

CHAPTER 2

cont'd PROJECT 5.1

- 5.3 1 Expert in paper/pulp technology for 1 year to uprate quality of paper being produced by 4 existing Ecuadorian Paper Mills to the level of high quality bond paper.
- 5.4 1 Expert in foundry technology for 1 year to improve quality of castings produced by 7 existing grey iron foundries.

6. Priority: Immediate
7. Costs: \$ 410,000
8. Co-ordinators: Ecuador: Centro de Desarrollo Industrial del Ecuador (CENDES)
India: Council of Scientific and Industrial Research (CSIR)

CHAPTER 2

PROJECT: 5.2

1. Country: ECUADOR
2. Nature of Project: New Core Industry
3. Title: Establishment of a light forge shop for manufacture of hand tools

4. Introduction:

Forge shop is a core industry for the metal mechanic sector. To make a start in this vital sector, DINE wants to establish a 400 t/year forge shop for manufacturing high quality alloy steel hand-tools. This forgeshop could subsequently take up forging for automotive/other sectors. Project outline has already been developed by DINE (copy given to Indian mission will be passed on to CSIR).

5. Scope of Cooperation:

Phase 1: Detailed feasibility study including detailed market survey to be conducted by India and existing study updated.

Phase 2: Based on the re-appraisal made by the experts and its acceptance by DINE, detailed engineering report by Indian experts.

Ecuador extends an invitation to India for equity participation in project.

6. Priority: Phase 1: Immediate
Phase 2: To follow

7. Costs: Phase 1: US\$ 30,000
Phase 2: US\$ 100,000

8. Co-ordinators: Ecuador: Direccion de Industrials del Ejercito
India: CSIR/Consulting Firms

CHAPTER 2

PROJECT: 5.3

1. Country: ECUADOR
2. Nature of Project: Institutional level
3. Title: Strengthening of industrial design and higher technical capabilities in metal-mechanic sector

4. Introduction:

Escuela Politecnica Nacional, a small institution, was strengthened about ten years ago by the Ecuador Government for providing higher technical education up to undergraduate level. They turn out 200 graduates per year in all disciplines of Engineering/Architecture. Masters courses in some disciplines were started last year. Laboratory facilities are also being extended with the help of OEA (Organizacion de Estados Americanos).

5. Scope of Cooperation:

To reinforce design and technical capabilities of the country, they require the following strengthening of their own faculty.

5.1 3 Experts in the fields of:

1. Physical Metallurgy: 6 months
2. Fluids and Thermodynamics: 6 months
3. Machine design with particular reference to development of agricultural machines: 6 months

The experts will help remodel syllabi and course work, identify projects for research/thesis work for undergraduate/post graduate studies.

CHAPTER 2

cont'd PROJECT: 5.3

- 5.2 Advanced studies for faculty members of Escuela in the above fields in Indian IIT's/National Laboratories for a period of 6 months each.
- 5.3 Masters/Doctoral courses for promising students in the above fields, coupled with training in National Laboratories/ Industries, so that Indian experience can be used in raising standard of technical education at Escuela. M.S/Ph. D's will subsequently join faculty

6. Priority: High
7. Costs: US\$ 400,000
8. Co-ordinators: Ecuador: Escuela Politecnica Nacional, Quito
India: CSIR

CHAPTER 2

PROJECT: 5.4

1. Country: ECUADOR
2. Nature of Project: Industrial
3. Title: Setting up of a grey-iron foundry with a capacity of 5 - 6000 t/year
4. Introduction:

To accelerate industry in the metal-mechanic field, DINE is very keen to establish a modern grey-iron foundry for:

1. castings for agricultural pumps
2. automotive castings
3. machine tool castings

Availability of these castings will provide the base for attracting/growth of industry in the above fields.

Pre-feasibility report, already under preparation, will be available in 6 months.

5. Scope of Cooperation:

1. Preparation of the Detailed Engineering Report after receipt of the Pre-feasibility Report (Outline of the project is with the Indian mission and will be handed over to CSIR). Detailed Engineering Project will be financed through CAF sources.
2. Equity participation by India (Government/private) would be favoured in the project. (Normal requirement is 20 - 49 % of Equity, and Debt: Equity ratio is 1.5).

CHAPTER 2

cont'd PROJECT 5.4

6. Priority: Immediate
7. Costs: US\$ 150,000
8. Co-ordinators: Founder: Direccion de Industrias del Ejercit
(DINE)
India: CSIR, New Delhi

CHAPTER 2

PROJECT 5.5

1. Country: ECUADOR
2. Nature of Project: New Core Industry
3. Title: Establishment of a 400,000 t/year integral steel plant based on direct reduction
4. Introduction:

To build up basic industry, a very high priority is being accorded to a 400,000 t/year steel complex. Feasibility study is being conducted by KORF, Germany and is expected in November 1977.
5. Scope of Co-operation:

Phase 1: Evaluation of KORF feasibility study in January 1978 and advice for decision making on technology processes, economics etc.

Phase 2: Training of Engineers in Indian Steel Plants. Details of fields/duration of training will be worked out by ECUASIDER subsequently.

Phase 3: Indian Experts in 1978 when site construction starts, for guidance during project construction/plant operation in:

 1. Overall management
 2. Steel-making
 3. Continuous casting
 4. Rolling Mills

ECUASIDER also extended an invitation to India for equity participation in the project to the extent of US\$ 12 million. Other International/National agencies have already agreed to participate.
6. Priority:

<u>Phase 1:</u>	Immediate
<u>Phases 2 and 3:</u>	To follow
7. Costs:

<u>Phase 1:</u>	US\$ 200,000
<u>Phases 2 and 3:</u>	Later
8. Co-ordinator:

<u>Ecuador:</u>	Compania Ecuatoriana de Siderurgia (ECUASIDER)
<u>India:</u>	SAIL-INDIA

CHAPTER 3

EXCHANGE OF INFORMATION

TO BE SUPPLIED

BY

TO

1. VENEZUELA

1.1. Detailed list of industrial projects identified by CORDIPLAN after analysis of imports into Venezuela during last 3-4 years, to enable India to identify areas of future co-operation.

CORDIPLAN
Venezuela

CSIR
India

1.2. Venezuela is having a fellowship scheme against which the National Railways would like to depute 2 or 3 engineers to the Indian Railway Training Institutes. Information regarding training facilities and programmes is required.

RITES
New Delhi

Instituto
Autonomo
Administracion
Ferrocarriles
Del Estado

2. PERU

2.1. Peruvian Rlys (ENAPER) are in the process of major rehabilitation with the help of foreign consultants and financed by CIDA (Canadian International Development Association) and local sources. Rehabilitation covers:

1. Diesel electric locomotives and particularly procurement of spare parts
2. Track (1435 mm gauge, 80 lb rails)
3. Procurement of new locomotives/rolling stock

ENAPER will be working out detailed programme of co-operation. They desire complete information on Indian capabilities.

RITES,
India

ENAPER,
Peru

CHAPTER 3

TO BE SUPPLIED

	<u>BY</u>	<u>TO</u>
2.2. Indian Railway Publications on track design, construction, modernization and maintenance	RITES, India	ENAPER, Peru
2.3. Indian Consultancy Services/ Expertise/Experience in steel making	SAIL, India	COFIDE, Peru
2.4. Indian Consultancy Services/ Expertise/Experience in petrochemicals	Ministry of Petroleum, India	INDUPERU, Peru
2.5. Small tractors and organization for their manufacture	Punjab Tractors Ltd., India	MAGENSA Lima, Peru
2.6. Machine-tools (HMT and others) and their prices	HMT, India	MORAVECO Lima, Peru
2.7. Policies, organization, planning and incentives for industrial estates for small and medium industries and ancilliary industries	DCSII, Government of India	Ministry of Industry, Peru
2.8. Policies for encouraging Small/Medium/ Technically Qualified entrepreneurs	IDBI, Bombay	Ministry of Industry, Peru

3. BOLIVIA

3.1. A 235 KM, MG, railway line between Yapaani - Trinidad Beni is a priority project of ENFE. Techno-economic studies and surveys etc. will be undertaken in 1978 and construction bids finalized in 1979. Bolivia will welcome Indian Railway bids for these constructions.

Ministerio de Transportes, Comunicaciones y Aeronautica Civil, Bolivia

RITES, India

CHAPTER 3

TO BE SUPPLIED

	<u>BY</u>	<u>TO</u>
3.2. ENFE wants to procure about 400 passenger coaches of proven modern design. They will like to examine technical data on the Indian Railways MG coaches and the feasibility of their local assembly.	Integral Coach Factory, Madras	Ministerio de Transportes Comunicacione y Aeronautica Civil, Bolivia
3.3. Indian Apprentice Act for building up a cadre of technical skills in Bolivia	CSIR	COPADENA/CAF
3.4. Indian developments in the field of optical instruments	CSIO, Chandigarh	COPADENA
3.5. Work done on beneficiation of rock phosphate	NML, Jamshedpur	Comite de Obras Publicas Santaorus
3.6. Indian experience/Consulting Firms in petrochemicals and fertilisers and their registration with CAF/All Andean Countries separately	Ministry of Petro-chemicals, India	YPPB/CAF
3.7. Special incentives for development of backward areas and technically qualified entrepreneurs	IDBI, Bombay	Ministry of Industry, COFADENA, CORDMCO
3.8. Work done on recovery of lead	NML, Jamshedpur	COMIBOL
3.9. Small-scale industries: Planning and policies for promotion, incentives centralised facilities	DCSSI, Government of India	COPADENA, Comite de Obras Publicas Santaorus

CHAPTER 3

TO BE SUPPLIED

BY

TO

4. CHILE

4.1. Chilean Rlys (FFCC)

(longest system in Andean Countries; 9000 km; 4 gauges (1676, 1435, 1000 and 600 mm); 3000 V. DC., diesel-electric and steam traction; national and international traffic; high altitude operation at Titioaca; change of bogies at break-of-gauge) are studying their system for improvements in efficiency/economy. Information on Indian experience in locomotive and rolling stock maintenance, workshop modernization, modernized/economic track maintenance, welded track and its economics and training facilities. Possibilities of supplying 5 MG. rack and pinion drive diesel-electric locomotives

RITES

FFCC

4.2. Credit systems for uplifting small farmers

ARDC,
Bombay

Central
Bank, Chile

4.3. Financing of small-scale industries and special incentives for them.

DCSSI
Government
of India

Central
Bank, Chile

4.4. Special incentives for encouraging technically qualified entrepreneurs

IDBI,
Bombay

Central
Bank, Chile

4.5. Continuous Casting and Rolling Plants of the Propers-Type-India's Manufacturing Capabilities

Galada
Continuous
Castings Ltd.
Hyderabad

MADECO

CHAPTER 3

TO BE SUPPLIED

	<u>BY</u>	<u>TO</u>
5. <u>ECUADOR</u>		
5.1. Total transport needs/relative economics/integration of different modes are currently under study by INTEGRAL (a National Agency) with IFRD finance. It is expected that railway freight traffic will increase 3-fold in near future (Current level 200,000 t/year). Indian experience on railway rehabilitation, development and modernization and the capabilities of the Indian Rlys in these fields.	RITES,	: JNP (Seccion Transporte) : Ferrocarriles de Ecuador
5.2. Indian capabilities for supply of small dehydration plants for onions and garlic of a capacity of 1 t/hr.	CSIR, India	CV-CFT
5.3. Agricultural machinery and equipment for small farmers in India	Min. of Agriculture, India	JNP
5.4. Development of new varieties of seeds in India and the Extension Services to reach them to farmers	Min. of Agriculture, India	JNP
5.5. Overall planning for hydro-electric power generation and rural electrification	Min. of Energy, India	JNP
5.6. National planning for health, nutrition and housing	Planning Commission, India	JNP

CHAPTER 3

TO BE SUPPLIED

	<u>BY</u>	<u>TO</u>
5.7. Small-scale industries: Planning and policies for promotion, incentives, centralized facilities	DCSSI, Government of India	JNP
5.8. Dairy equipment being manufactured in India	National Dairy Dev. Corporation, India	Camara Industriales de Pichincha, Quito
5.9. Machine tools manufactured in India and prices (Both HMT and others)	HMT, India	Camara Industriales de Pichincha, Quito

ANNEX I

VISITS/DISCUSSIONS

<u>DATE:</u>	<u>ORGANIZATIONS:</u>	<u>CONTACTS:</u>
<u>Vienna:</u> Austria 6th - 7th April 1977	UNIDO	G. S. Gouri Victor Veltze-Michel Swamy Rao A.A. S. Leang
<u>Caracas:</u> Venezuela 13th April 1977	Corporacion Andina de Fomento (CAF) Centro Libertador Av. Libertador	Julio Sanjines - President Humberto Suarez - Vice President Terry Suero - Vice President Raul Franco - Head Division Francisco Lira - Officer Jose L. Ascanio - Officer
14th April 1977	C.V.G. Siderurgica del Oninoco (SIDOR) Centro Ciudad Commercial Tamanaco, Box 11511	Luis Alvaray - Gerente de Proyectos. Enrique Forenz - Gerente de Proyectos. Carlos Vernet - Gerente de Proyectos.
15th April 1977	Ministerio de Fomento Direccion de Planifi- cacion Centro Simon Bolivar Edificio Sur El Silencio	Nelida Arvol - Officer Ana Sfier - Officer Doina Lazaro - Officer
	Instituto Autonomo Ferrocarriles de Venezuela Edificio Stemo Los Ruices	Antonio Ascanio - Gerente de Desarrollo y Operaciones.
<u>Lima:</u> Peru 18th April 1977	Instituto Cientifico Tecnologico y Minero (INCITEMI) MALECON Balta 758 Miraflores, Lima	Alberto Benavides - Presidente Cesar Sotillo - Director General

Date:

ORGANIZATIONS:

Contacts:

Lima: Peru
(cont'd)

Corporacion Financiera de
Desarrollo (COFIDE)

Oscar Espinoza - Presidente
Alejandro Seminario
Director.
Elmer Farrow - Director CMBIS

Industrias del Peru
(INDUPERU)
Calle 7 La Molina
Box 1596 Lima

Enrique Ramirez - Gerente
de Proyectos.

Laboratorio de Investigacion
y Analisis de Minerales
Conde de Superunda 586

Carlos Plenge,
Scientifico.

19th April 1977

Maestranza General S.A.
(Magensa)
Rodolfo Beltran 631, Lima

Jorge Carozano -
Gerente General.

Empresa Nacional de
Ferrocarriles del Peru
(ENAFER)

Edmundo Montagne
Gerente General.

Herramientas S.A.

Moraveco S.A.
Guillermo Dansey 1171
Lima

Pedro Ballada -
Gerente Ingenieria.
Bruno Heller.

20th April 1977

Ministerio de Industria
y Turismo
Urbanizacion Copacoin,
Lima

Magdalena Savarain
Director de Cooperacion
Tecnica.

Instituto de Investigacion
Tecnologica Industrial y
de Normas Tecnicas
(INTINTEC)
Av. Abancay 2^{do} Piso
Lima

Gustavo Flores - Gerente

Corporacion Andina de
Fomento - Oficina Nacional
Peru

Alfredo Llosa
Jefe Oficina.

Santa Cruz: Bolivia

21st April 1977

Forja Metisa
(Agricultural Implements/
Hand Tools)

Industrial visit

<u>DATE:</u>	<u>ORGANIZATIONS:</u>	<u>Contacts:</u>
<u>Santa Cruz:</u> Bolivia (cont'd)	Forja Sometal, (H.V. Electrical connectors/ Fittings)	Industrial visit
	Eduardo-Foundry	Industrial visit
	Maestranza Nando Bowles (Auto-Repair Shop) Fabrica Electromatic (Transformers)	Industrial visit Industrial visit
	Camara de Comercio y Industria	Members of the Chamber and Comite Obras Publicas
<u>Cochabamba:</u> Bolivia		
23rd April 1977	Fanatram (Tractors)	Industrial visit
	Maca (Press work)	Industrial visit
	Femco (Domestic light fittings)	Industrial visit
	Cablebol (cables and conductors)	Industrial visit
	Imsa (Non-ferrous Foundry cooks and valves)	Industrial visit
	Corporacion Desarrollo de Cochabamba (CORDECO) Asociacion Industria Metalmeccanica	Members of Cordeco and Asociacion Industria Metalmeccanica
<u>Oruro:</u> Bolivia		
24th April 1977	Empresa Nacional de Fundiciones (ENAF), Tin and Antimony Smelting Plant Box 612 Oruro	Luis R. Montoya Superintendente de Produccion.
	ACHROS Tessa (Steel Foundry)	Industrial visit
	Funestano (Private Tin Smelting Unit)	Industrial visit

DATE:

ORGANIZATIONS:

CONTACTS:

La Paz: Bolivia

25th April 1977

Ministerio de Industria
y Turismo

Cnel. Carlos Rodrigo Plaza,
Ministro.
Rolando Pereira,
Sub-Secretario

Secretaria General
de Integracion
Box 4317 La Paz

Jaime Torrico
Jefe Unidad de
Desarrollo y Transferencia
de Tecnologia,
Rene Alarcon
F.O.M.O.-CONEPLAN.
Rosario de Iturrealde,
Direccion Cooperacion
Internacional.

Corporacion Andina de
Fomento - Oficina Nacional
Bolivia

Raul Vivado
Jefe Oficina

26th April 1977

Ministerio de Planificacion
y Coordinacion de la
Presidencia de la Republica

Alberto Valdez - Sub-
Secretario.
Frans Bach - Jefe Proyecto
Parque Industrial
Cochabamba.
Alfonso Criales - Director
Planificacion.
Percy Cuellar - Jefe Proyecto
Parque Industrial,
Santa Cruz.
Justo Yepes, Asesor Metal-
meccanico, Comité Obras
Publicas, Santa Cruz.
Gilberto Zubieta,
Sector Siderurgico.
Ricardo Maldonado
Director Ejecutivo,
Instituto Nacional
de Electrificacion Rural.
Maria del C. Cuadros
INDEF

Ministerio de Transportes
Comunicaciones y
Aeronautica Civil

Mario Antezana,
Sub-Secretario
de Transportes.

<u>DATE:</u>	<u>ORGANIZATIONS:</u>	<u>CONTACTS:</u>
<u>Santiago de Chile:</u>		
Chile		
27th April 1977	Banco Central Agustinas 1180 Santiago	Enrique Tassara, Gerente de Financiamiento Externo. Diego Fleischmann. Valentin Tarazoff.
	Corporacion de Fomento de la Produccion (CORFO)	Herman Velasquez Gerente de Desarrollo
	Instituto Chileno del Acero (ICHA)	Sergio Montenegro, Director
28th April 1977	Asociacion de Industriales Metalurgicos (ACINMET) Agustinas 785 -4 ^{to} Piso, Santiago	Luciano Cabala, Gerente General.
	Sociedad de Construcciones Metalicas (SOCOMETAL)	Carlos Bravo, Gerente General.
	Centro de Investigaciones Mineras y Metalurgicas Box 170	Alexander Sutulo Director Ejecutivo.
	Instituto de Investigaciones Tecnologicas (INTEC) Box 667	Ricardo Berner, Director de Comercializacion.
29th April 1977	Ferrocarriles del Estado	Cnel Enrique Oesa, Gerente General.
	Famae, Pedro Mont 1601	Cnel S. Hidalgo
	Banco Central,	Enrique Tassara Gerente de Financiamiento Externo
<u>Quito: Ecuador</u>		
2nd May 1977	Escuela Politecnica Nacional.	Stalin Suarez, Dean. Oswaldo Landazuri - Professor.

DATE:

ORGANIZATIONS:

CONTACTS:

Quito: Ecuador
cont'd

Comision de Valores-Corporacion
Financiera Nacional (CV-CFN)

Leopoldo Baez,
Gerente.
Jorge Vela B.,
Investigaciones
Economicas.
Rafael Teran,
Jefe Departamento
Difusion Industrial.
Carlos Garzman,
Promocion Industrial.

3 May 1977

Ecuatoriana de Siderurgia
(ECUASIDER)
Av. Colon y 6 de Diciembre,
300 Quito

Carlos Tobar A.,
Gerente General .
Patricio Rubianes,
Director Finanzas .
Jaime Figueroa,
Director Tecnico.

Centro de Desarrollo
Industrial (CENDES)
Box 2321

Marco Bravo S.,
Director de Promocion

Camara de Industria y
Comercio de Pichincha

Gonzalo Baez,
Vice Presidente Tecnico.
Ruben Baquero,
Gerente.
Eduardo Andrada,
Promocion CAF.

4 May 1977

Direccion de Industrias
del Ejercito (DINE)

Ing. Jorge Almeida Acosta,
Subdirector de la Direccion
de Industrias del Ejercito.

Junto Nacional Planificacion

Pablo Viteri,
Seccion Transportes.

DATE:

ORGANIZATIONS:

CONTACTS:

Caracas: Venezuela

6 May 1977

Instituto Nacional de
Cooperacion Educativa
(INCE)
Box 40340

Alejandro Garcia,
Director General de
Ingenieria.
Hiram Padron,
Jefe Division.

Corporacion Andina de
Fomento (CAF)

Julio Sanjines - President
Terry Suero - Vice President
H. Suarez - Vice President
M. Caraccioli - Vice President
G. Espinosa - Adviser
D. Chiriboga - Legal Adviser
A. Torres - Head Division
F. Lira - Officer

Oficina Central de
Coordinacion y Planificacion
de la Presidencia de la
Republica

Hector Menezes - Director
General.
Carlos Vargas - Director
Planificacion.
Josefina Rodriguez,
Director Cooperacion Tecnica.

INDIAN INSTITUTIONS REFERRED IN THE REPORT

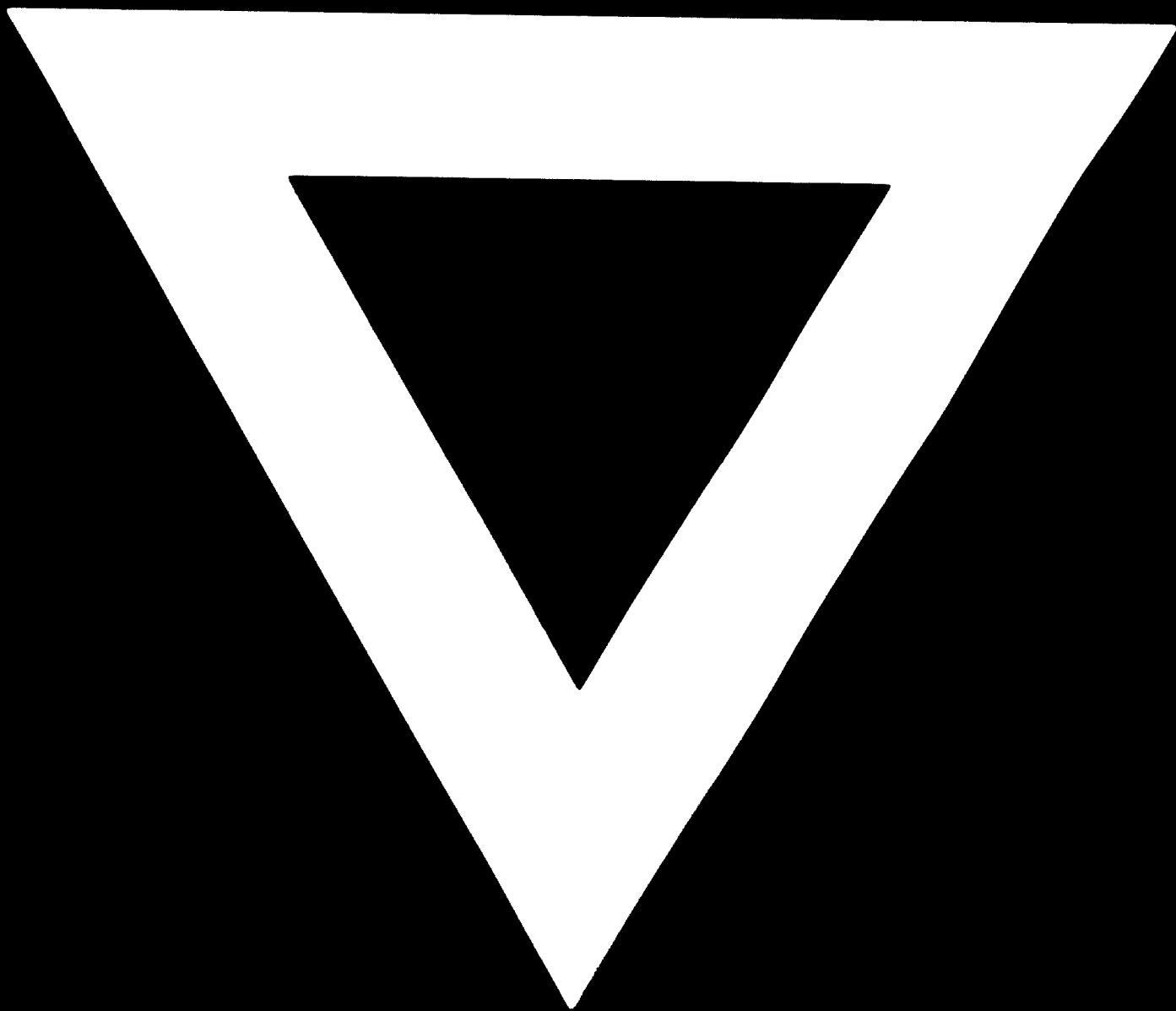
<u>ABBREVIATION</u>	<u>NAME/ADDRESS</u>	<u>CONTACT</u>
1. RITES	Rail India Technical and Economic Services Barakhamba Road New Delhi-110001	C.M. Malik Director Technical
2. PTL	Punjab Tractors Ltd. No 10, Sector 9 CHANDIGARH - 160009	Chandra Mohan Managing Director
3. NML	National Metallurgical Laboratory JAMSHEDPUR - 831007	1. V.A. Altekar Director 2. Rajendra Kumar Dy. Director
4. CSIR	Council of Scientific and Industrial Research Rafi Marg NEW DELHI-110001	1. Y. Nayudamma Director General 2. Baldev Singh Chief, Technology Utilisation
5. CFRI	Central Fuel Research Institute JFALOGRA Dist. Dhanbad	M.G. Krishna Director
6. SERC	Structural Engineering Research Centre ROORKEE	Director
7. GSI	Geological Survey of India Chowringhee CALCUTTA	Director General
8. MEC	Mineral Exploration Corporation NAGPUR	Managing Director
9. DESSI	Development Commissioner Small-Scale Industries (Govt. of India) Udyog. Bhavan NEW DELHI-110001	I.C. Puri Dev. Commissioner

10	EIL	Engineers India Ltd. Parliament Street NEW DELHI-110001	Chairman
11.	FCI	Fertilizer Corporation of India NEW DELHI-110001	
12.	REC	Rural Electrification Corporation, Ring Road, South Extension NEW DELHI	Managing Director
13.	SAIL-INDIA	Steel Authority of India Ltd. Basturba Gandhi Marg NEW DELHI-110001	R.P. Billimoria Chairman
14.	CMERI	Central Mechanical Engineering Research Institute DURGAPUR-9	J.K. Banu Director
15.	-	Ministry of Petroleum NEW DELHI-110001	Secretary
16.	HMT	Hindustan Machine Tools Ltd. Cunningham Road BANGALORE-560001	S.M. Patil Chairman and Managing Director
17.	IDBI	Industrial Development Bank of India Jolly Makers Chambers BOMBAY	Raghu Raj Chairman
18.	ICF	Integral Coach Factory Perambur MADRAS	I.R. Gosain General Manager
19.	CSIO	Central Scientific Instruments Organisation CHANDIGARH	Harsha Vardhan Director
20.	ARDC	Agricultural Refinance and Development Corporation Shree Niketan Aorli, BOMBAY	R.K. Hazari Chairman M. Chidambaram Managing Director
21.	-	Ministry of Agriculture Krishi Bhavan NEW DELHI	K.S. Navang, Secretary P.J. Zacharaich Commissioner (Machinery)

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| 22. | - | Ministry of Energy
NEW DELHI-110001 | Secretary |
| 23. | - | Planning Commission
Yojana Bhavan
Parliament Street
NEW DELHI-110001 | Vice Chairman |
| 24. | - | National Dairy Development
Corporation
ANAND, Gujarat State | Chairman |
| 25 | GALCONCAST | Galada Continuous
Casting Ltd.
Industrial Estate
HYDERABAD | DC Galada
Managing Director |



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